FLIGHT

The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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INDEX AND TITLE PAGE FOR VOL. XII.

The 8-page Index for Vol. XII of "FLIGHT" (January to December, 1920) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1/- per copy, post free.

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

May ...	Seaplane Contests on Lake Garde, Italy
May 15 ...	Entries Close for Schneider Cup
May 21 ...	U.S.A. National Balloon Race, Alabama
June ...	Imperial Air Conference
June 10 ...	Race, Lugo–Trieste–Triente–Lugo
July 2 ...	Aerial Pageant (Hendon) for R.A.F. Memorial
July 6 ...	Entries close for Aerial Derby
July 16 ...	Aerial Derby
July 29–31	Jacques Schneider Cup, Venice
Aug. 27 ...	Entries Close for Coupe Deutsch
Sept. 4–11	Brescia Races
Sept. 5 ...	Pulitzer Trophy, Detroit, U.S.A.
Sept. 18 ...	Gordon Bennett Balloon Race
Sept. 25–Oct. 2	Aero Exhibition, Prague
Oct. 1 ...	Coupe Deutsch de la Meurthe
Nov. ...	Paris Aero Salon

EDITORIAL COMMENT

ELSEWHERE in this issue we publish in full a translation from the French of the new regulations governing the international race for the *Coupe Deutsch de la Meurthe*, which will in future take the place of the Gordon Bennett. The Coupe Deutsch is to be a speed race pure and simple. That is to say, there are no restrictions of any kind, no minimum landing speed nor any useful load over and above the weight of pilot and fuel.

The New Coupe Deutsch

It has often been argued that some restriction should be imposed in races of this description so as to avoid freak machines. While on the face of it this contention appears to be justified, on further thought we are inclined to think that restrictions of this sort, for a race which is intended to be a contest between the fastest machines in the world, are superfluous, or even harmful. After all, the designers of an aeroplane, and the pilots, are probably the best judges of what is or is not a safe machine. If the personal element did not enter into the question to such a great extent it would be different, but what is safe for one particular combination of pilot and machine may be distinctly unsafe for another combination. And to have one great international speed race every year, although it may superficially appear to be of little practical use, is in reality of the greatest importance. Nothing finds the weak spots in a design as quickly and as surely as a speed contest. When speeds of round about 200 m.p.h. are attained, it is the machine in which the greatest care has been paid to minute details which will prove just that mile an hour faster which is or may be enough to make the difference between winning and losing the race. Thus the racing machine must of necessity be the ultra refined design, with resistance reduced to an absolute minimum.

As regards the Coupe Deutsch itself, the race will be flown over the old Gordon Bennett course, from the Villesauvage aerodrome south of Etampes to La Marmogne near Gidy and back, a distance of 300 kilometres (186 miles). The prizes are an *objet d'art* valued 20,000 francs and a money prize for the winner each year for three years of 60,000 francs. Apart from the commercial value to any firm of having won the Coupe Deutsch, and the

considerable prizes offered, the prestige of a country is greatly enhanced by making a good showing in such a race. It is therefore to be hoped that this year will see several British machines at Villesauvage. There are close on five months left in which to produce a machine for the race, and as several firms are contemplating entering machines for the Aerial Derby, one hopes that they will, at the same time, keep in mind the Coupe Deutsch. Last year two British machines were actually at Villesauvage during the Gordon Bennett, one of them taking part in the race. The other arrived too late to be allowed to enter. Those two very sporting entries, which were largely financed by the pilots themselves and their friends, were admirable and deserving of the highest praise. But if we are to have any hopes of winning the Coupe Deutsch we will have to make a better effort this year. That is to say, it must not be left to a few individuals to do their level—but wholly insufficient—best. Concerted action and thorough organisation is required. We are equal to producing machines worthy of the great race. Let us show that we are also capable of using them to the best advantage. We would call the attention of manufacturers to the dates: The race itself on October 1. Entries close August 27. Machines must be on the aerodrome at Villesauvage by September 30, but to make sure, and to allow pilots to make themselves familiar with the course, it will be better to have them in readiness a couple of days before that date.

* * *

American Aviation in the War

It is inevitable that a war of any magnitude should bring in its train charges of incompetency and corruption against some who have been engaged in its prosecution, particularly those who have had to do with the supply side of affairs. Our own experience after the South African War is a case in point. Sometimes the charges can be justified, but in most cases they fail because men are only human and are apt to make genuine mistakes of judgment under the stress of abnormal conditions, while it has always to be remembered that in war nothing matters so much as the defeat of the enemy in the shortest possible time. Therefore, things can be done with impunity which, in more normal times, would lead to all sorts of unpleasant charges. As a matter of fact, experience shows that, except in the comparatively few cases arising in which real turpitude has been manifested, it is best after a war of any size to wipe the slate clean and endeavour to forget all about the mismanagement and the errors which seem to be a necessary concomitant of war.

America seems to have been learning this lesson, particularly with regard to the expenditure on her aviation services. For the past two years it has been alleged against the administration that a billion and a half of dollars were expended on the Air Service without any tangible result being shown for the expenditure. Figures seem now to have been adduced to show that the accusations referred to were very wide of the mark. The actual expenditure incurred appears to have been very little more than a third of the sum stated, while as for there being nothing to show, in numbers of machines and engines produced we seem to think that America did surprisingly well. In the twenty-one months which elapsed between the entry of America into the War and the Armistice, she had to create not only an Air Service, but an aeronautical industry. During the nine years previous to 1917, no more than 142 machines had been built for the United States Air Services, but in the following twenty-one months American factories produced no fewer than 13,894 complete machines and 41,953 aero engines. In so far as *personnel* is concerned, at the Armistice the American Air Service numbered 20,568 officers and 174,456 other ranks. Certainly on the figures America cannot reasonably complain that she did not get value for the money expended.

Where we suspect the shoe pinches is that at the actual cessation of hostilities there were no more than 667 American machines actually in service at the front. Without the slightest desire to discuss matters which are no concern of anybody but the American, we think we may venture to point out that America had done very well indeed to get that number of machines into actual fighting commission in the time. We do not know our own figures of production for the first twenty-one months of the War, but we should like to venture the opinion that we had not 600 machines at the front. We had by then had the very same problems to solve by which America was beset in 1917–18. We had to create out of practically nothing an Air Service and an aeronautical industry, and if we made as much progress as America did in the corresponding period we should be very pleased to know it. However, we will not pursue the subject farther. Indeed, we should not have referred to it at all had the official statement of the case not been sent to us direct We will therefore content ourselves by saying that we are very well pleased to know that the American Air Service has been able to show that the charges levelled against it have not been founded on fact, and we congratulate our Ally on having achieved a really magnificent performance. We will not say that it was bad luck that the War ended before there was a chance for her air effort to make itself fully felt, as it would have been if the struggle had lasted over the following winter. Our friends on the other side of the Atlantic must take consolation from the adage that Rome was not built in a day, nor can an overwhelmingly powerful and actually effective air service be created in a year and a half.

* * *

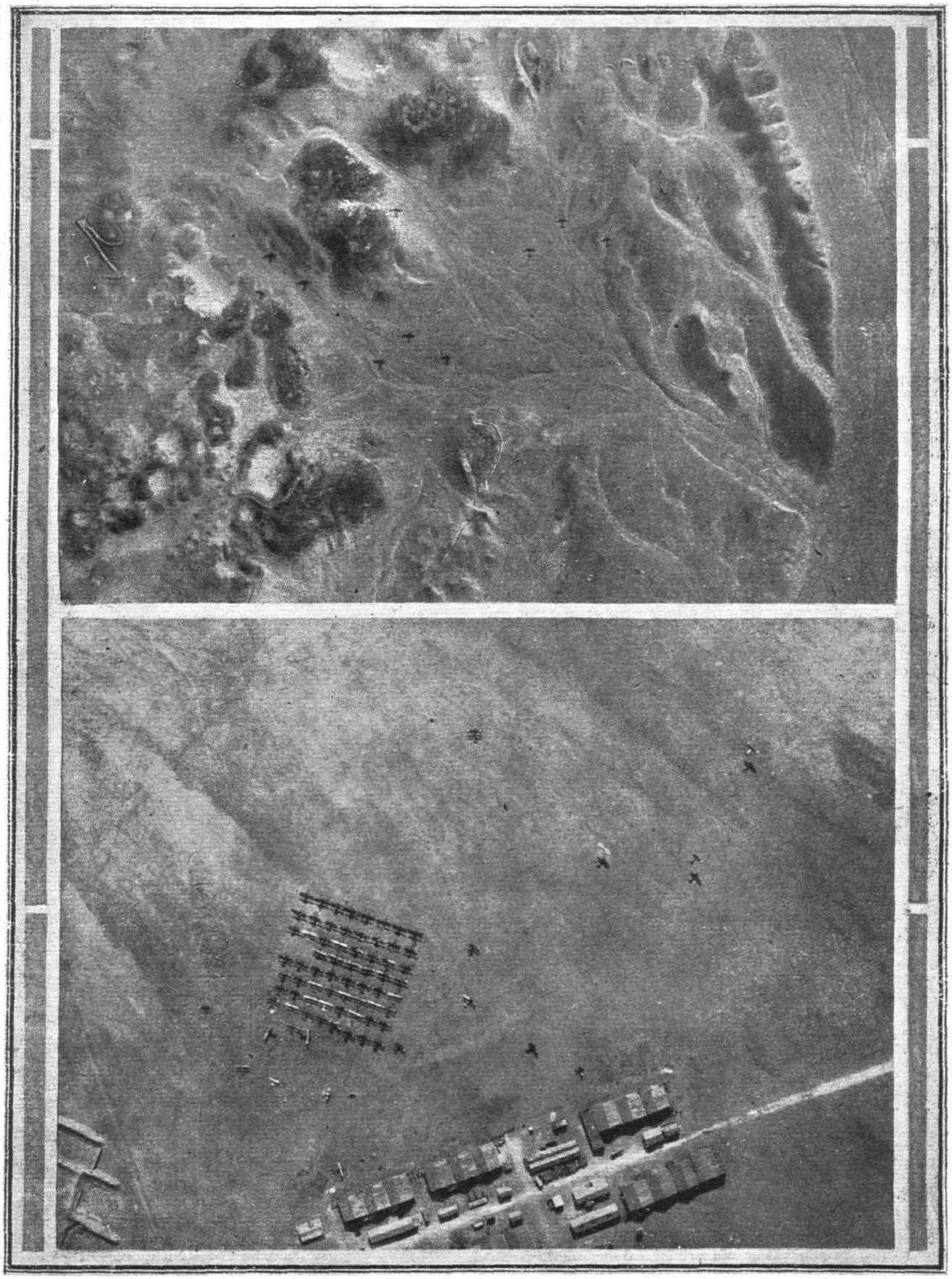
Our Airships

We note that an aeronautical correspondent of *The Times* states that a reversal of policy has been made in regard to the airships, and that instead of the service being closed down a further respite has been granted. He points out that an immediate closing down now, when negotiations for the disposal of the ships have been brought to a standstill by industrial depression, would be detrimental to the public interest. The negotiations with private enterprise have progressed so far that there is every reason to preserve the service in being until they can be resumed in a more favourable atmosphere. But for the coal dispute, he says, there would have been some long-distance demonstration flights with the airships, and these may be expected to be carried out as soon as circumstances permit.

As a matter of fact, it is understood that the respite referred to is one of three months' duration. It is common knowledge that the intention was to have closed down the airship service altogether at the end of last month, but it has now been decreed that it is to carry on until the end of July. What will happen then, if in the meantime some satisfactory

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

The Camera and the 'Plane



IN THE DAYS AGONE: A review of the R.A.F. in Egypt by General Allenby. At the top is seen (from above) a formation on way to saluting point; and at the bottom, the formation taking off at Abbassia

end to the negotiations mentioned is not achieved, it is impossible to say. As to the long-distance demonstration flights of which *The Times* speaks, we have reason to think that the coal trouble has nothing whatever to do with their abandonment, which has really been decreed on the score of "economy." It had been projected to make a demonstration flight to Egypt, in order to show that it is possible even now to run a mail and passenger service by airship at a profit on ordinary commercial rates. Now it is said that this flight is too long to be undertaken at the public charge and it has been washed out!

The latest report is that a regular service between Croydon and Paris is to be undertaken by "R. 36" as a means of showing that airships can be operated commercially. It is intended to erect a mooring-mast at Waddon and, presumably, one at Le Bourget, and that the service shall be started in about a month's time. In spite of the fact that it is asking a great deal of a ship of the type of "R. 36" to pay her way on a short-distance service such as that between London and Paris, we trust that report speaks truly in this matter, for we believe that the successful operation of such a service would do a great deal to convince those who are at present dubious of the possibilities of the rigid airship. Still, it is but fair to point out in advance that "R. 36" is not at all a suitable type of craft for short-distance work, and to pay her way she will have to be assured of full loads each way on every trip. As her passenger accommodation is designed now she can carry the equivalent of 50 people, and if she is to pay she will have to get them, or the equivalent in mails and parcels, not occasionally but every time. We are inclined to think there will be little difficulty about this, particularly before the novelty of travel by airship has worn off. There is no question but that while there are large numbers of people who would like to take advantage of the speed of aerial travel between the two capitals, a great proportion are chary—unreasonably so—of trusting themselves to the aeroplane, in spite of the fact that the aeroplane over short distances is as reliable as any other form of travel. In fact many such would not hesitate to make their initial venture in the air by airship where they might not use the heavier than aircraft. To these an airship service would make a great appeal, and it is here that we anticipate a fair measure of success for the experiment if and when it comes off. Once the air baptism has been obtained, repetition is a natural corollary.

The Mooring Mast

The longer the experiments at Pulham are continued the more clear does it become that the mooring-mast is for the time being at least a complete solution of the successful operation of airship services, so far as terminal arrangements are concerned. It is some weeks ago now since we were able, by the courtesy of the Air Ministry, to visit Pulham and see and hear what has been done with the mast there, which is an experimental improvisation. Even then it was a proved success, but we understand that since our visit other experiments have been carried out which justify us in saying what we have—that the mooring-mast is the complete solution of success at terminal ports. Not only has "R. 33" been successfully moored out since February last, but work has been done on the ship which hitherto could only have been accomplished when she was safely housed in a shed. For instance, one of her engines was taken out and replaced by another, while for several days she lay at the mast minus one of her gas containers, which had developed a defect and was removed for repairs. This is certainly encouraging to those who initiated the idea of "mooring-out" these big craft, and we think they are very much to be congratulated upon the vindication of their opinions which the experiments at Pulham have furnished.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MAY 1 AND MAY 7, INCLUSIVE

Route‡	No. of flights*	No. of passengers	No. of flights carrying Mails	No. of flights carrying Goods	No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
						h. m.		
Croydon-Paris	19	75	2	13	18	2 50	Spad F-CMAV (1h. 59m.) ...	B. (4), Br. (1), D.H.18 (1), G. (3), Sp. (3), V. (1).
Paris-Croydon	21	75	11	18	19	2 45	D.H.18 G-EAUF (2h. 17m.)	B. (4), D.H.18 (1), G. (4), Sp. (4), V. (1).
Cricklewood-Paris ...	3	30	3	3	3	3 20	H.P. G-EATN (2h. 40m.) ...	H.P. (3).
Paris-Cricklewood ...	3	26	—	1	3	3 8	H.P. G-EATM (2h. 50m.) ...	H.P. (2).
Croydon-Brussels ...	6	6	4	4	6	3 32	D.H.9 O-BATA (2h. 44m.) ...	Av. (2), D.H.9 (3).
Brussels-Croydon ...	5	5	5	5	5	3 4	D.H.4 O-BADO (2h. 41m.)...	D.H.4 (1), D.H.9 (3).
Croydon-Amsterdam ...	5	2	5	5	5	3 44	D.H.9 H-NABP (3h. 19m.)...	D.H.9 (1), F. (2).
Amsterdam-Croydon ...	6	7	4	3	5	3 54	Fokker H-NABG (3h. 5m.)...	D.H.9 (1), F. (3).
Totals for week ...	68	226	34	52	64			

* Not including "private" flights. † Including certain journeys when stops were made *en route*.
‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. N. = Nieuport. P. = Potez.
Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijkie Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

FLIGHT

THE LAWSON MIDNIGHT AIRLINER

THE new Lawson Midnight Airliner which has recently been completed at the Lawson Airplane Company's plant in Milwaukee, Wisconsin, contains a large number of new features in aeroplane design and construction.

This ship, like all of its predecessors built by the Lawson Airplane Company, was designed by Alfred W. Lawson, who has already brought out eight distinct types of aeroplane design during the past five years, and it might be added here that all of the ships which Mr. Lawson designed and which were built under his direction have already met with considerable success.

This mammoth ship, which is designated in the series of airliners already having been built or now in course of construction by the Lawson Airplane Company, is technically known as the " L-4."

In designing the Midnight Airliner, Mr. Lawson brought out a ship which can be either used for passenger carrying or mail carrying purposes, and can also be changed from a night ship with sleeping berths to a day ship with chairs, within half an hour.

Some of the special features which the new ship contains and which might be particularly interesting to call attention to at this time are as follows : The captain and pilot's house, which is walled off separately from the general cabin, contains a collapsible seat for the pilot whereby he can either thrust his head out through an opening in the roof of the cabin and thereby have a clear and unobstructed view from the outside, or he can lower his seat a foot and a half and, by closing the aperture in the roof with a slide provided for the occasion, he can then be enclosed entirely within and see to steer the ship, through windows all round the pilot's cabin. There is a dual control in this cabin which is operated by both the captain, who will act as navigator, and the mate, who will act as pilot or steersman, as it were.

Besides having regular sleeping-berths for the passengers in the regular cabin, there is also a toilet-room which has all of the ordinary accessories of a Pullman railway car plus a shower bath, which Mr. Lawson has installed for the use of fastidious passengers who may want to pay an extra price for such a luxury !

Just back of the cabin is located the Mail Compartment, in which has been designed a mail chute whereby mail can be either put on or taken off while the machine is in flight. Passengers can also be taken on or put off through the same method, while the ship is in flight.

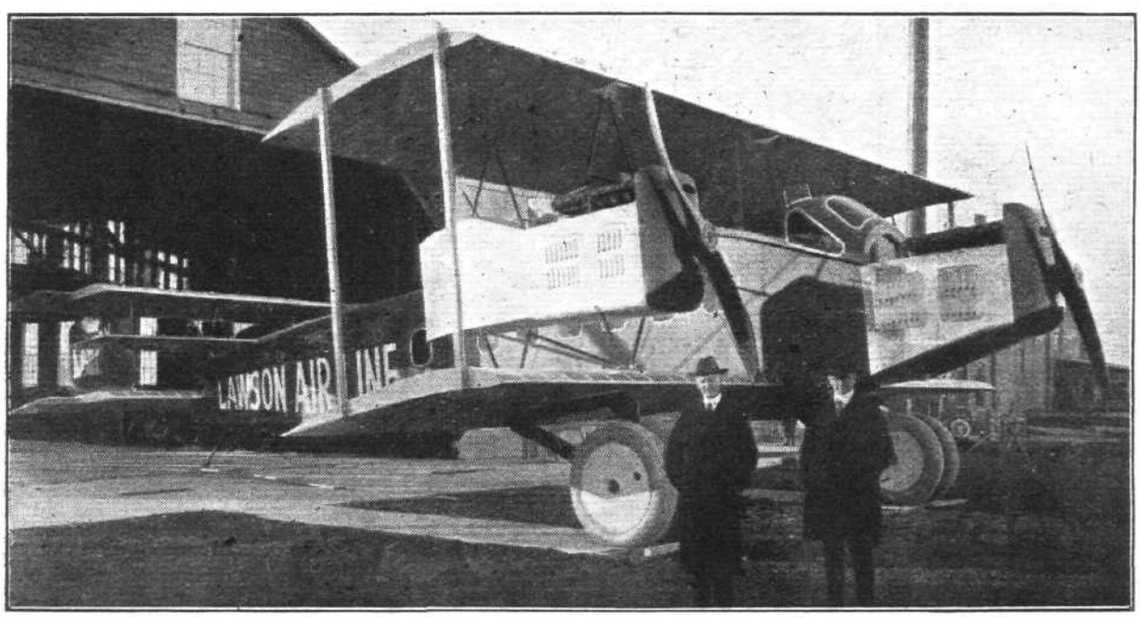
This is accomplished by a smaller machine flying up under the Lawson Airliner and running along at the same speed as the latter. A mail bag is lowered by a rope to the " under-'plane " and another bag of mail is taken on in exchange. A passenger can also be put off or taken on by this same process, and it is Mr. Lawson's intention during some of the early flights of the " L-4 " to try-out both the taking-on and putting-off of mail and passengers by this method. [We think we will make the *full* journey, at present, thank you !—ED.]

A more or less technical description of the Lawson Midnight Airliner is as follows :—

Fuselage.—The pilot's cabin is separated from the main cabin by a double hinge door in which is placed a bevelled glass window so that either pilot or navigator may see into the passenger cabin or *vice versa*, and also talking tubes are placed through this door so that the captain or pilot may talk directly to the engine man and mechanic who sits in the first seats of the regular cabin.

In front of the controls is a mahogany dashboard equipped with a complete set of instruments, such as three sets of Delco Boosters, tachometers, oil pressure gauges, and water and oil thermometers. There is also a clock, barometer, air speed indicator, vertimeter, lateral and longitudinal inclinometers. A word might be said of the tachometers. Due to these being installed on the dashboard in the pilot cabin, the shafts that run to the engines are attached to right-angle reduction gears, which drive the long shaft one-fourth crank shaft speed, a large factor in preventing shaft whipping or breakage where directions of drive take place. These shafts as well as the air, oil and water thermometer lines, run through streamline cases between the body and the *nacelles*.

Between the pilots, and mounted on top of an aluminium pedestal, are the throttle levers, so arranged that any one or all motors can be controlled at the same time. On the face of this pedestal and about 4 inches as below the top is a hand wheel for operating the trimming plane. The throttle controls are positive throughout the entire system, being composed of steel tubing, which rotate or push and pull, as the case may be.



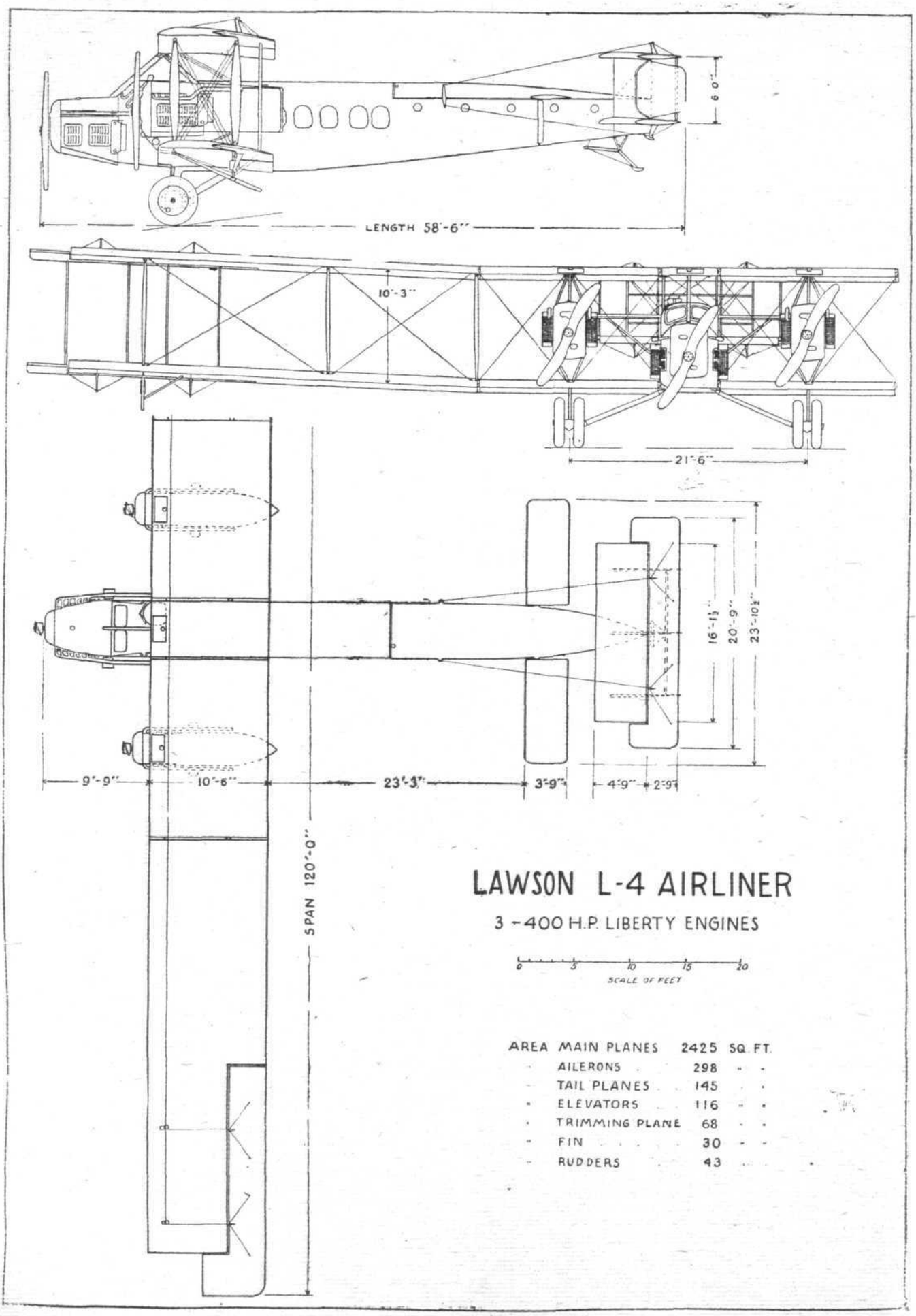
The Lawson Midnight Airliner, L-4: A general view of the machine minus the main plane extensions. It is fitted with three 400 h.p. Liberty engines, the central engine housing, on the fuselage, being a complete, detachable unit.

Dep. control is used. Instead of the usual chain drive, bevel gears rotate a vertical shaft running through the main column, which has a pinion at the base driving a rack. On the outer ends of each rack the *aileron* control cables are attached, these running directly out to the wings after passing over large directional pulleys.

The elevators are operated by doubled cables running under the floors on the left side of the body, to a rocker shaft placed on the top *longeron* in back of the cabin. Several inspection doors are placed on the floor of the cabin for these as well as the rudder cables, which also are arranged similarly to the elevator control cables.

On a separate dashboard overhead and between the pilots are placed the switches. Near the seats are placed fire extinguishers.

A mechanic dashboard is placed in the front end of the main cabin on the right side. This is equipped with air pressure gauges and an air distributor tank into which the air is pumped from the engines, for the air pressure petrol system, and properly distributed to the respective petrol tanks. This tank is always primed, so it is an easy matter to start all three engines. Alongside of the dashboard are



THE LAWSON MIDNIGHT AIRLINER, L-4: Plan, side and front elevations to scale.

the ignition control handles for advance and retard, there being push and pull rods to all motors.

The cabin itself is of the convertible type, having attachments for twenty-six seats, berths and mail compartments. When used as a day machine all twenty-six seats are installed, and when used as a sleeper there are six seats and berths. These latter are of the disappearing type, and can be extended within a few minutes. The machine carries a complete lighting system for dashboard, cabin lights, wing and tail lights, and a large search light and a heating system. At the rear end of the cabin, and on the right side of the machine is located the main entrance door. Directly across from this door on the right side of the machine is a complete bathroom, the first ever installed upon any aeroplane. There is a shower bath, washstand and towels, mirror, drinking water and lavatory. A large overhead water tank of both hot and cold water is used for the shower, while the tank containing ice water is used for drinking purposes. The whole compartment is white enamelled, with white rubber draw-curtains on the windows and entrance, while the floor is tiled.

Behind the bathroom is a mail chute and baggage room. This is reached through a door which also allows entrance for inspection of the rear end of the body. An inspection walk runs from this door to the stern.

Constructionally the body is composed of spruce *longerons* the entire length. These are pin jointed at the front allowing a complete removal of the whole front engine with its control and attachments, radiators, etc. The *longerons* are again jointed immediately behind the rear end of the cabin, thus allowing the whole tail to be removed and a new one installed, thus facilitating little wastage of time in making repairs.

The complete cabin section is composed of laminated spruce bulk heads with the grain of the wood running according to the direction of the loads, thus allowing greatest strength for least weight. The cabin is completely covered with veneer with light stiffening pieces. The windows are of safety glass while those in the pilot cabin are of celluloid due to the convex curves of this section. The rear end of the *fuselage* is standard construction, having spruce struts and cable bracing, and is linen covered. At the extreme rear end and around the tail plane and tail skid section the body is again covered with veneer to stiffen this portion and prevent twisting.

The interior of the cabin is finished in mahogany and cream, and is covered with a heavy green brussels carpet, while the outside is enamelled green throughout.

When used as a mail machine, mail compartments are installed in place of all but six of the usual passenger seats, thus allowing passenger carrying as well as mail and cargo. This is the only change found necessary for this conversion.

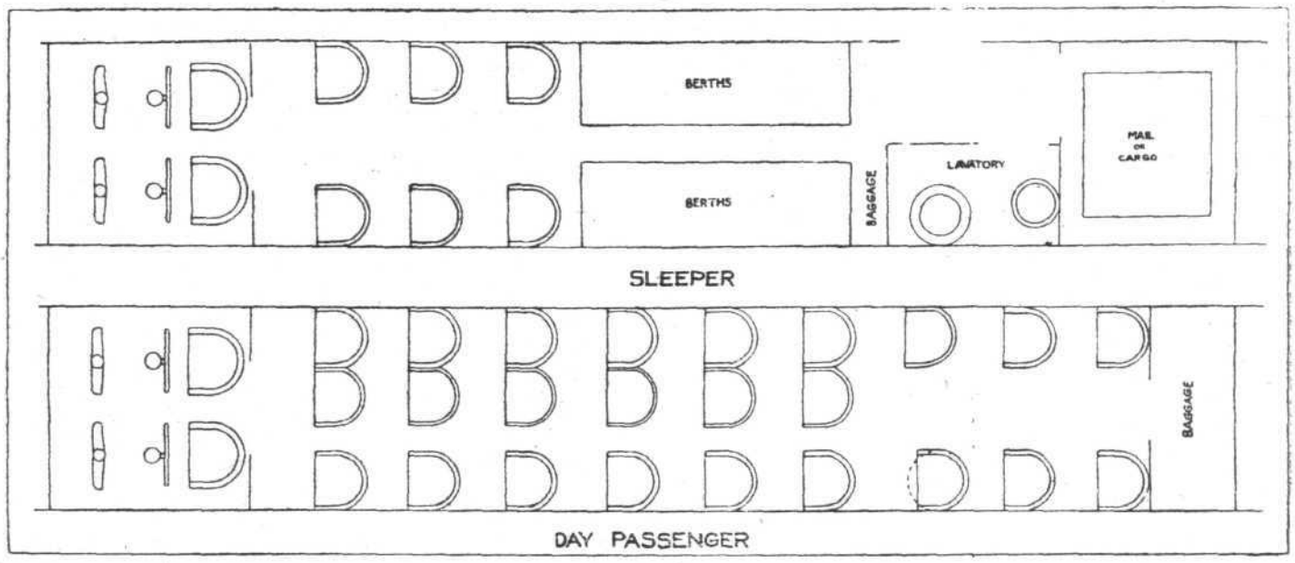
Wing Structure.—There are five sections in the upper and four on the lower, each hanging to the other and to the body. They are of the usual construction, consisting of two spars of I-section spruce, and laminated in two pieces with hardwood strips top and bottom. The ribs are of the girder type, and are of spruce material throughout. All ribs are of standard section, there being no special ribs in the whole structure. Square spruce struts carry the compression. The engine section panels have internal wires in both directions, while all other panels are of $\frac{3}{16}$-in. cable doubled for drift loads and single for trueing. The lift cables are double and the landing cables single. Large balanced *ailerons* are used top and bottom, and are connected by streamline tubing instead of wires, thereby eliminating continual care and attention. Celluloid inspection doors are placed at all *aileron* control cable pulleys on the lower wings. Spruce struts of streamline section are used externally. All cable strut fittings are of the internal type, concentrating all loads on the neutral axis of the spar. As in the body and other parts, these fittings are chrome vanadium steel, heat-treated and zinc-plated, giving an enormous strength for their weight. On each end of the wings and under the outer struts are ash wing skids which are sprung by rubber shock-absorber cord covered by an all-metal streamline case. To the skid is hung a tube which telescopes into another tube mounted on a ball-and-socket joint to the rear spar. The front end of the skid is hinged to a fitting on the spar, while a diagonal tubing rakes the side action. The wings are linen covered and coated with clear varnish. The factor of safety is six throughout.

Empenage.—This is of biplane type, having balanced elevators and three rudders, the outer two of which are also balanced. In front of the rudders are vertical fins. The construction is similar to the wings. To relieve the weight of the elevators upon the pilot controls these are equalised by rubber absorbers attached to a lever upon the rocker shaft in the rear end of the body. The elevators are also connected together by tubes like in the *aileron* system. The vertical fins are provided with adjustable screws on the top of the front ends, thus allowing the top tail plane to be set to any required angle.

A trimming plane is installed just ahead of the tail plane, which can be adjusted in flight from the pilot cabin by a wheel before mentioned. This is worked by a screw and trunnion, so the setting is at all time positively locked in position. All vertical surfaces are enamelled green, while the horizontal surfaces are finished similar to the wings.

Landing Gear.—Four large Palmer wheels of 1,250 mm. by 250 mm., or 49 by 10, and streamline cased, compose the main landing gear. These are placed upon short axles of high grade steel tubing, which in turn are slid over cast steel elbows on the inner ends. This elbow is fixed to heavy compression tubes running up to the body, and are pinned there. The Vee is of triangular shape made of laminated spruce with the grain of the wood arranged as in the body bulkheads. On each side of the apex of the Vee are the rubber absorbers placed in line with the Vee. The nose and tail of the shock-absorber brackets are cased with streamline fairings. The tail skid is rubber absorber sprung, and is universally mounted to the body by four steel tubes. In case of failure of any part of this member the machine will fall upon a streamline bumper secured permanently to the sternpost.

Nacelles.—On each side of the body and between the top and bottom wings are placed the *nacelles*. These are of spruce *longerons*, laminated bulkheads and struts, braced by



THE LAWSON MIDNIGHT AIRLINER, L-4 : Diagrams showing the cabin lay-out for passenger or mail work.

$\frac{3}{16}$-in. cables. The engines are directly behind laminated spruce nose pieces having vents for air circulation. The *nacelles* are completely covered with aluminium excepting the nose pièces, and all sides excepting the bottom are provided with large doors. The petrol tanks in the rear end of the *nacelles* are protected by an aluminium fire-plate. The bottom of each *nacelle* is formed to a well shape where oil and refuse may collect and drain out through pipes. The oil tanks are placed alongside of each engine, and where they will receive a certain amount of cooling as well as allow a small amount of piping. Both engines are equipped with carburettor stacks, which direct back firing out and away from the *nacelles* or tanks. Long exhaust pipes help to direct any flames away also, as well as to deaden the noises and carry any oil from the exhausts away from the machine completely. Inserted in the entering edge of the top wing are water header tanks. These are connected to the engine water outlet and radiator inlet pipes through large pipes which also help to cool the water due to their exposure to the air. On either sides of the *nacelles* and behind the engines are the radiators suspended on steel tubing and brackets. Although, perhaps, rather small, they have been installed in this position after careful experimenting and tests which indicate this position the best for cooling purposes. All radiators are equipped with shutters on the rear side, these being operated by levers in the cabin. Each pair of radiators being connected together can be worked independently from any motor desired.

The centre engine, as before mentioned, is mounted on a detachable nose. The nose piece is similar to the *nacelle* nose piece as in the cooling. It is also equipped with carburettor stack and the same system of radiators. The fuel tank for this engine is under the pilot cabin. It will thus be seen that each motor has its separate petrol system thereby eliminating considerable trouble in case of a leak. All pipes and wiring are marked with the standard specifications identification colours to allow quick inspection, repair or assembly. The oil tank is alongside of the motor, thus again allowing the use of short piping. An aluminium fire-plate attached directly to the bulkhead, also separates the engine from the cabin.

Other characteristics and the principal dimensions of the Lawson Midnight Airliner are as under :—

Span	120 ft.
Overall length	58 ft. 6 ins.
Overall height	18 ft.
Wing section	U.S.A. 5.
Chord	10 ft. 6 ins.
Gap	10 ft. 3 ins.
Upper wing area, including *ailerons*	1,250 sq. ft.
Lower wing area, including *ailerons*	1,175 sq. ft.
Total *aileron* area	298 sq. ft.
Total stabiliser area	145 sq. ft.
Total elevator area	116 sq. ft.
Trimming plane area	68 sq. ft.
Total fin area	30 sq. ft.
Total area of rudders	43 sq. ft.
Power Plant	
Three standard Liberty's, 400 h.p. each, 1,700 r.p.m.	1,200 h.p.
Three propellers, 10 ft. dia. 6 ft. 6 ins. pitch, fuel consumption of each motor at 1,700 r.p.m., 5 lb. per h.p. hr.	36 gal. hr.
Oil consumption of each motor at 1,700 r.p.m., ·0373 lb. per h.p. hr.	2·13 gal. hr.
Fuel consumption of three motors	108 gal.
Oil consumption of three motors	6·39 gal.
Nacelle fuel tank capacity (2)	490 gal.
Centre engine main fuel tank capacity	149 gal.
Centre engine auxil. tanks (2)	94 gal.
Total fuel capacity	733 gal.
Total oil tank capacity	58·2 gal.
Total capacity of three overhead water tanks (3)	18 gal.
Weight Distribution and Performance	
Structural weight, including wings, *fuselage* and *nacelles* complete, trimming plane, control surfaces, and landing gear	7,434 lbs.
Power plant, including water and tanks, petrol tanks, piping and wiring, exhaust manifolds, *nacelle* tanks, propellers and radiators	4,560 lbs.
Fuel and oil	4,589 lbs.
Passengers, baggage and mail (as mail machine)	3,570 lbs.
Passengers, baggage and cargo (as passenger machine)	4,360 lbs.
Total weight, mail, 21,462 lbs.; passenger,	22,820 lbs.
Best ang. of glide, 1 in 16·9 at 60 m.p.h.	
Endurance at full power (ground level) at 108 gal. hr.	6·78 hrs.
Endurance at cruising speed at 6,000 ft.	11 hrs.
Maximum speed	112 m.p.h.
Cruising speed	70 m.p.h.
Landing speed	53 m.p.h.
Range	800–825 miles.
Service ceiling	22,000 ft.

NOTICES TO AIRMEN

Aerodromes for Civil Use: Amendments

NOTICE to Airmen No. 33 of 1921 (Aerodromes for Civil Use : Consolidated List) is amended as follows :—

LIST C.—*Licensed Civil Aerodromes.* (*a*) Southport (Sands) should be deleted.

(*b*) The following should be added :—Llanwrtyd Wells, adjoining Abernant Hotel ; Sandown, Isle of Wight.

The following should be deleted :—Caversham, Blagraves Farm.

(No. 39 of 1921.)

Communication between Civil Aircraft and R.A.F. Ground W/T Stations

1. THE following international W/T call signs have been allocated and their signification notified to the International Telegraph Bureau, Berne. They will be brought into force at 0001 G.M.T. on May 10, 1921 :—

GEA Any British R.A.F. Aircraft.
GEZ Any British R.A.F. Ground W/T Station.

2. The call sign GEZ provides a means of emergency W/T communication in cases of distress between civil aircraft and the nearest R.A.F. Ground W/T Station.

3. This call sign will be used by civil aircraft in emergency in the following manner :—

Example : Aircraft G—EAMA is in difficulties through engine trouble, and wishes to communicate with the nearest R.A.F. W/T station.

The aircraft makes (*in all cases stating its approximate position*) :—

$\overline{CT}$ GEZ GEZ GEZ de GEAMA GEAMA GEAMA $\overline{BT}$
OVER ASHFORD 1100 aaa ENGINE TROUBLE $\overline{AR}$

The *nearest* R.A.F. W/T station will then reply, using the call sign GEZ and stating its name, thus :—

$\overline{CT}$ GEAMA GEAMA GEAMA de GEZ GEZ GEZ $\overline{BT}$
HAWKINGE ANSWERING $\overline{AR}$.

(No. 40 of 1921.)

General Swinton Leaves Air Ministry

WE learn that General E. D. Swinton, who for the last two years has done such excellent work as Controller of Information, has now left the Air Ministry in order to become a director of the " Scarab " Oil Burning Company. General Swinton's dispatches from the earlier stages of the War, when he was the official " Eye-Witness," will still be remembered for their vivid realism, and his book " The Green Curve," written under the pseudonym " Ole Luk-Oje," was much talked of at the time of its publication. General Swinton is an excellent organiser, and was responsible for the formation and command of the first unit of tanks. He will carry with him to his new position the best wishes of all connected with aviation.

A New Latécoère Passenger Machine

FROM France it is reported that the Latécoère firm at Toulouse have nearing completion a large passenger machine which will accommodate 20 passengers. No details are available regarding the new machine. Incidentally, it might be mentioned that the firm, which is running a service between Toulouse and Casablanca, has changed its name from *Lignes Aériennes Latécoère* to *La Compagnie Générale d'Enterprises Aéronautiques.*

FLIGHT

COUPE HENRY DEUTSCH DE LA MEURTHE

(INTERNATIONAL CONTEST)

(Under the Regulations of the Federation Aeronautique Internationale and the C.S.A.)

GENERAL REGULATIONS

LAST week we were able to refer briefly to the new rules for the Coupe Deutsch de la Meurthe. We have now received the complete regulations as drawn up by the *Commission d'Aviation* of the *Aero Club de France*.

Origin of the Cup

Art. 1. Mme. Henry Deutsch de la Meurthe and her family have decided to offer, in memory of M. Henry Deutsch de la Meurthe, a sum of 200,000 francs for an international speed contest to be called the Coupe Henry Deutsch de la Meurthe.

The Cup will be contested under the conditions laid down in the present regulations, which have been drawn up at the request of the donors, and with their approval, by the *Commission d'Aviation* of the *Aero Club de France*. The *Commission d'Aviation* is responsible for the organisation of the Contest.

Prizes

Art. 2. The sum of 200,000 francs will be distributed as follows:—(*a*) An objet d'art of 20,000 francs. (*b*) Three prizes of 60,000 francs each to be awarded to the winners of the Cup, in accordance with the present regulations.

General Conditions

Art. 3. The Contest will be an international challenge open to all machines of Class "C" (flying machine with engine). It will consist of a speed test over a distance of about 300 kms. Each year before May 1, the *Commision d'Aviation* of the *Aero Club de France*, taking into account the progress in Aviation, shall publish the special regulations for that year.

Qualification of Competitors—Pilots

Art. 4. Every qualified National Federation shall signify to the *Aero Club de France* its willingness to contest the Cup. This notification must reach the Secretary of the *Commission d'Aviation* of the said Club before the date fixed by the special regulations for the year. This entry must be accompanied by a sum of 1,000 francs for each machine, 500 francs being returned in respect of each machine crossing the starting line in flight.

The entrants of each nation shall be the constructors of the machines, and shall not be approved unless presented by a National Federation affiliated to the *Fédération Aéronautique Internationale*. Each National Federation shall not present more than three entrants (*i.e.*, 3 machines in all).

The entrants and pilots in charge of the machines must be of the same nationality as the Federation presenting them, or belong to a country not represented on the *Fédération Aéronautique Internationale*, the countries that were at war with France from 1914 to 1918 being excepted, unless they are members of the League of Nations.

Date and Place of Contest

Art. 5. The Cup will be contested each year on a date, and at a place fixed by the Special Regulations for the year.

Award of the Cup.—Provisional Holder and Permanent Holder

Art. 6. The National Federation recognised by the *Fédération Aéronautique Internationale* whose representative has won the Cup, shall be the Provisional Holder until the following award has been made. The objet d'art shall remain in the hands of the *Aero Club de France* until the final award has been made.

The Permanent Holder of the Cup shall be the Competitor who has twice won the Contest, or, failing that, the third winner. In the event of the first two contests being won by the same competitor, this competitor having become the Permanent Holder of the Cup, shall at the same time receive the remaining two prizes of 60,000 francs.

Art. 7. Entrants are responsible for all accidents to themselves and their personnel, as well as for damages of any kind to third parties, officials, etc., caused by their machines, pilots, workmen or themselves.

Art. 8. To satisfy administrative and customs requirements, competitors must send to the *Commission d'Aviation de l'Aero Club de France*, on a date to be fixed by the annual regulations, the following information (failure to do so may prevent the competitor taking part in the Contest):—

1. Value of each machine. 2. Name and address of the pilot of the machine, also name and address of the substitute, it being permissible to change the first pilot if necessary. 3. Name or number of machine. 4. Type of machine and motor. 5. Weight and material of wings. 6. Weight of motor. 7. Weight of propellers. 8. Country of origin.

Supplementary Regulations for 1921

Art. 1. The Contest will take place over 300 kilometres in the circuit Villesauvage–La Marmogne (the course of the Gordon Bennett Cup 1920). Alightings, repairs and replenishments are allowed.

Art. 2. The Contest will take place on October 1, 1921.

Art. 3. Entries presented by the National Federations must reach the *Commission d'Aviation de l'Aero Club de France* before 6 p.m., on August 27, 1921.

Art. 4. Machines must be on the Aerodrome at Villesauvage before 4 p.m. on the day before the Contest, viz., September 30, 1921.

Art. 5. Competitors must send to the Secretary of the *Commission d'Aviation* before 6 p.m. on August 27, 1921, the information required in Art. 8 of the General Regulations.

Art. 6. Each entrant must nominate, by a declaration in writing to be handed to the *Commissaires Sportifs* before 6 p.m. on the day before the Contest, a person to represent him on the Course. This person shall declare the time of departure.

Art. 7. The Contest shall be open from 9 a.m. to 6 p.m. During this period of 9 hours, starts shall be made at times chosen by the competitors, as follows:—

Each entrant, or the person accredited by him, shall inform the *Commissaires Sportifs* of his intention of starting, indicating the time at which he wishes to start. The *Commissaires Sportifs* shall then hand to him a slip fixing the time of starting, after which 30 minutes will be allowed to the competitor to cross the starting line in flight.

If after the expiration of this time the competitor has not crossed the starting line in flight, he will be obliged to make a second and final request to start, and the same procedure will be followed as for the first request, except that at the expiration of the second 30 minutes, the competitor will be considered to have started.

All communications regarding this Contest should be addressed to the Secretary, Royal Aero Club, 3, Clifford Street, London, W. 1.

India's Hundred Aeroplanes

THE gift of 100 aeroplanes from this country to the Government of India, it is to be hoped, will bear good missionary fruit. The machines presented comprised 60 D.H. 9's with Siddeley-Puma engines, and 40 Avros with Gnome Monosoupape engines. Of these it is understood that up to the early part of this year, 21 D.H. 9's and 28 Avros had been disposed of.

Some of these aeroplanes, the Government of India explain, have been offered to and accepted by local governments and administrations; others have been offered to ruling princes, and 20 Avros have been made over to the Royal Air Force for instructional purposes. The remainder will be offered to aero clubs and ex-Royal Air Force officers resident in India, and to other individuals or companies prepared to establish schools of instruction in aviation.

The machines are handed over free of charge at Karachi, and the recipients have to make their own arrangements for their removal, the only condition attaching to a free gift of these aeroplanes being that they should be used by the recipients themselves for purposes of demonstration or instruction, and should not be sold to third parties.

Applications for these machines, which should be addressed to the Secretary, Air Board, Department of Commerce, Simla, should be supported by the recommendations of local governments or other responsible authorities or persons.

Mishap at Cologne

WHEN flying near Lindenthal, a suburb of Cologne, on May 4, Flying Officer Geoffrey Bradney Pershouse and Leading Airman Roberts were killed. By some means the machine fouled some telegraph wires and crashed into a tree, both occupants being reported fatally injured.

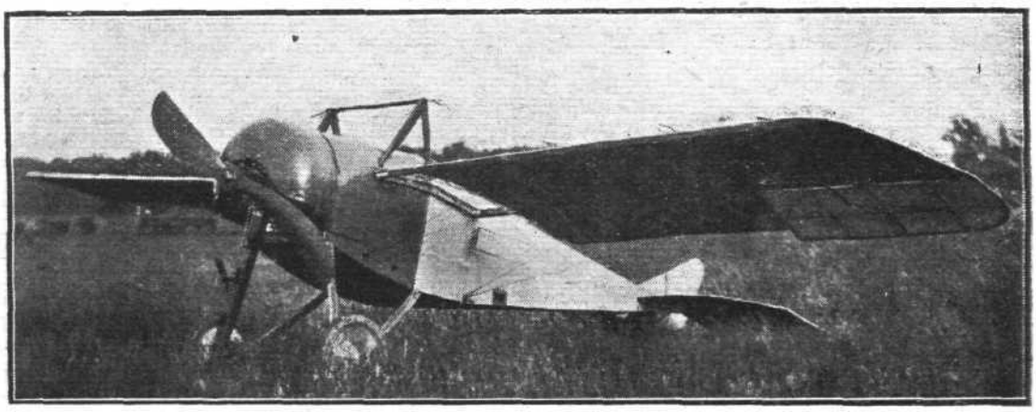
THE H.L. "MARLBURIAN"

An Interesting Amateur-Built Monoplane

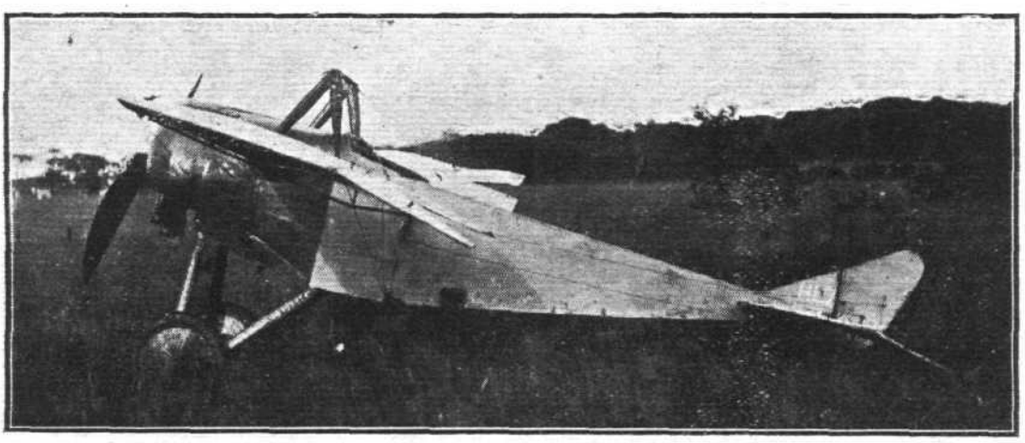
FOR those who have been interested in, or connected with, aviation since its earliest days, and who have watched the enormous progress made during the War in the design, manufacture, and handling of aeroplanes, there is, perhaps not unnaturally, a tendency to look back with regret upon the "old days" and to lament the passing of the spirit which animated the pioneers of flying and pervaded the whole aviation community. Aviation in those days was mainly confined to a relatively few enthusiasts who did not expect to make the business pay handsome dividends, but who were content so long as they could scrape sufficient money together to carry on with their experiments and make technical progress. One is apt to think that the industry has now become "commercialised," and that most people are looking upon it as an ordinary business proposition. This view is not, of course, strictly justified, otherwise the industry of today might be even smaller than it is, but it is a very natural one.

It is therefore very refreshing, and also very encouraging to those who believe in the future of flying in its many aspects, to find that the old spirit is by no means dead, and that here and there, if one look carefully, one may yet come across instances of enthusiasm and a spirit closely akin to that of the pioneers of flying. One such instance, which, we think, is worthy of reference, is furnished by a youth living near Newcastle, who has built no less than seven machines with his own hands and practically unaided. On one of these he taught himself to fly at the mature age of 16½. Truly the spirit of the pioneers is not dead.

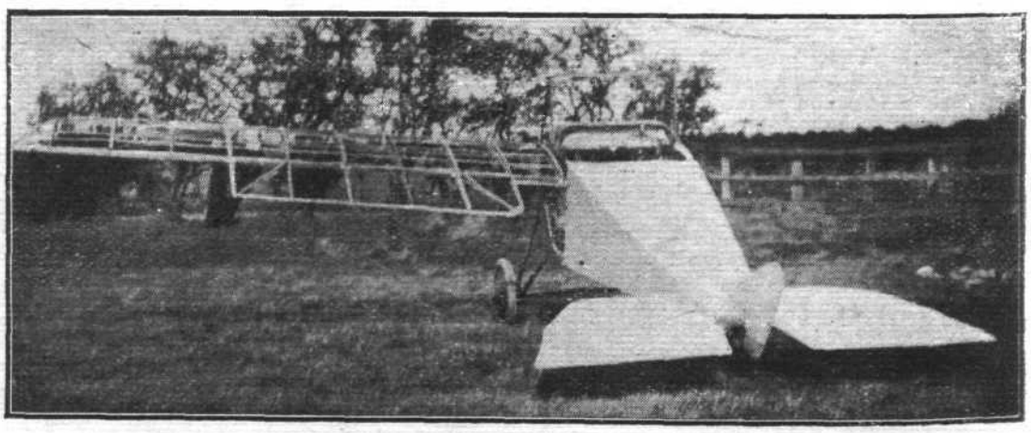
The machine which is illustrated in the accompanying photographs is the seventh of a series of machines of various types built by Mr. F. Harold Lowe, of Heaton, Newcastle-on-Tyne, and represents the results of his practical experience since he first commenced building aeroplanes as a hobby in 1916. At the present time Mr. Lowe is only 20 years of age, and one may therefore look forward to see many more machines take shape under his dexterous hands. The latest of his products is a small monoplane which he calls the



The H.L. "Marlburian": Three-quarter front view.



The H.L. "Marlburian": Side view.



The H.L. "Marlburian": Rear view, showing port wing in skeleton.

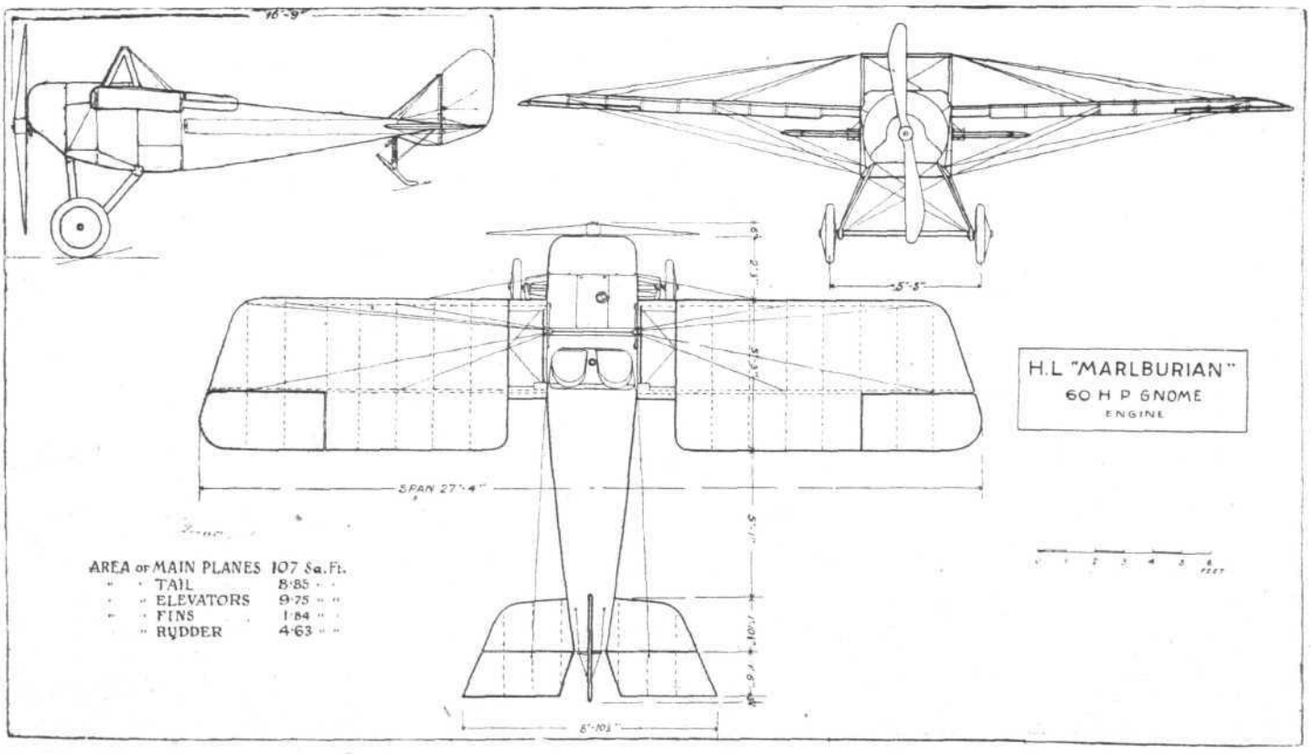
"Marlburian," and is fitted with a 60 h.p. Gnome engine. The design of the machine occupied 5 months of Mr. Lowe's spare time, and the actual construction of the machine, from sawing the first piece of timber to putting on the finishing touches, represents 840 hours' work. The only parts that were purchased ready-made were the engine, wheels, propeller and instruments. All the rest was made by Mr. Lowe from the raw material. Those who have any conception of modern aeroplane work will realise what building a machine single-handed means, and will also appreciate that Mr. Lowe cannot have spent many of the 840 hours in day-dreaming and in contemplating his work.

THE H.L. "MARLBURIAN": Three-quarter front view of *fuselage*.

The Machine

As the accompanying illustrations will show, the "Marlburian" is rather a pretty little monoplane on fairly orthodox lines, with a *fuselage* tapering off to a horizontal knife edge at the stern, after the fashion of the Morane-Saulnier pre-War monoplanes. It will be noticed that there is a slight discrepancy between the photographs and the general arrangement drawings as regards the rudder and fin. In the photographs the early form of rudder and fin are shown. These, as might have been anticipated, proved inadequate, the machine showing a tendency to swerve when being taxied on the ground. This was remedied by fitting larger fin and rudder, as shown in the scale drawings, and the machine is now, we understand, very easy on the controls and answers her rudder well, also when on the ground.

The *fuselage* is fairly wide, and has seating accommodation for pilot and one passenger side by side. It is built up of four spruce *longerons*, with spruce struts and cross members, braced with steel wire. The front three bays are covered with three-ply wood. At the point of attachment of the undercarriage struts the lower *longerons* are built into a girder



THE H.L. "MARLBURIAN": Plan, side and front elevations, to scale.

section so as to provide greater strength locally. The undercarriage itself is of the simple Vee type, with struts of solid spruce, streamline section, bound with tape. Both front and rear panels have transverse bracing. The wheels are Palmer Aero wheels, 600 mm. by 70 mm., sprung from the chassis struts by rubber cord shock-absorbers. The tail skid is built of steel throughout, and is steerable.

As shown in the plan view, the main planes have raked tips with rounded corners. They are of fairly thin section, although the camber is considerable. The spars, of which the front one is placed almost on the leading edge, are of solid spruce. Alternate ribs are of box sections, and serve as compression struts, there being four bays of internal bracing. The other ribs are of I-section, with spruce flanges and poplar webs. The wing bracing is in the form of plain steel wire, with four anti-lift wires, eight lift wires, and one external drag wire to each wing. The lift wires are attached to the lower *longeron*, and not, as in the Moranes, to a *cabane* under the body. This gives a somewhat flat angle to the wires. The top, or anti-lift, wires are secured to two *cabanes* in the form of inverted Vees, somewhat like those of the old Deperdussin monoplanes. All wire attachments are of the quick-release type, the shed available for the machine at present being so small that Mr. Lowe is obliged to take the wings off when putting the machine in its shed. This operation, however, occupies only about 20 minutes.

The *ailerons* have channel section spruce leading edges, with streamline steel tube trailing edge. The *aileron* king-posts are of cast aluminium, and are provided on the under surface only, being operated by a system of rods and cranks inside the wings. The controls actually pull down one *aileron* only, the other being given its differential motion by a spring and the short rods going to the king-post. Thus all operating gear is underneath or inside the wing, leaving the upper surface unencumbered.

The tail plane, which is set at a negative incidence of one degree, has box spars of spruce, the front spar being braced by tubes to the lower *longerons*, while the rear spar is braced by wires to top and bottom fins. The elevator is of the divided type with the rudder working between the two halves.

The 60 h.p. Gnome engine is mounted on a steel capping plate in the nose of the *fuselage*, while the shaft is supported on a transverse channel steel bearer designed to take the thrust. The cowling and side panels are of aluminium, the latter being hinged like the bonnet of a car. Fuel supply is by means of a windmill pump mounted on the right-hand undercarriage front strut and delivering petrol from a tank mounted under the seats. The oil tank is just in front of the dashboard, and supplies the oil to the engine-driven pump by gravity. In order to ensure the fuel supply in the event of any trouble with the windmill pump, there is a hand-pump in the cockpit.

The following are the main data of the machine :—Span, 28 ft. 6 ins. ; chord, 5 ft. 3 ins. ; length o.a., 17 ft. ; height, 8 ft. 4 ins. Weight empty, 450 lbs. Duration, 3 hours at 85 m.p.h. Maximum speed, 100 m.p.h. Landing speed, 33 m.p.h. Engine, 60 h.p. Gnome propeller, " Integral," 8 ft. 4 ins. diameter.

Mr. Lowe has had the machine out for several flights, among which may be mentioned its first, which was of 27 minutes' duration. He is, we think, to be congratulated on his achievement, and we trust that his example may be followed by other enthusiasts. We shall always be pleased to give space in our columns to descriptions of such efforts by amateurs.

LONDON TERMINAL AERODROME, CROYDON

Monday Evening, May 9, 1921

THE Instone Air Line have had full loads throughout the week, 57 passengers having been carried by this firm alone, in addition to goods and mail. On Saturday, Lord Leverhulme, who is now 70 years of age, arrived from Paris on a " D.H. 18." Mr. Powell, the pilot, said that the journey had been rather " bumpy," but in spite of this Lord Leverhulme and his fellow-passengers were enthusiastic as to the pleasure and ease of the trip.

Capt. Leverton, of the K.L.M., tells me that goods traffic to Holland is growing steadily. It is curious that on the London-Amsterdam service the principal load is goods, whilst between London and Paris the passenger traffic is the backbone of the " airway." There are, however, already more passengers travelling to Holland by air than during last year, and signs are not wanting that the number will increase during the summer.

Quite a number of the old " Airco " employés are now with the K.L.M. In addition to Messrs. Holmes and Duke, the pilots, Mr. Calvert, who was ground engineer for " Airco," is now chief mechanic at Amsterdam. Mr Young is in charge of the mechanical side at Croydon, and Miss Coll is acting as Capt. Leverton's secretary.

On Friday a " D.H. 9," with a Dutch registration mark, arrived piloted by Mynheer Hofstra, who, although on his first trip, and in spite of bad weather, put up a very fine effort, getting across the Surrey Hills through a gap in the clouds at Redhill. Mr. Olley flew a Fokker monoplane over on the same day. This machine is to be kept as a " spare," as Capt. Leverton was let down badly by the suspension of the service from Holland on Ascension Day, having to cancel not only goods and mail, but passengers as well. If there had been a spare machine on this side this would not have happened.

The first of a fleet of new French Spads arrived during the week. This machine carries five passengers four in a comfortable cabin, and one outside beside the pilot. The engine is a 260 h.p. Salmson, the whole machine being neat and clean in design. They are to be operated by the Messageries Aériennes, who have been particularly busy since the commencement of their new services last Monday.

The last two designs of machine in use at the air-port have one fault in common. There is nothing to prevent passengers from walking straight out of the machine into the " prop." The only safe way to overcome this is to stop the engine before passengers alight, and not to start it until passengers and goods have been stowed aboard. This certainly involves additional trouble in starting engines, but better this than the accident that must occur almost inevitably with the present system.

I understand that a new service is to be commenced between Paris and Amsterdam on May 17. Farman " Goliaths " are to be used, and a non-stop journey is contemplated. The present service between these two cities calls at Brussels.

On Thursday night further tests on the night-flying lights were carried out. A Service Handley Page 0-400, piloted by Capt. Roach, R.A.F., flew over from Biggin Hill and landed at Croydon, guided by petrol flares. Lieut.-Col. Blandy and several " airway " officials then got on board, and the machine took off along the beam of a searchlight, disappearing from the beam in a climbing turn. After a short flight the machine again landed, this time with the aid of one searchlight, the flares having been put out.

In connection with these night flights, an idea so often expressed, that the general public is not interested in flying, is very plainly refuted. It only requires a short paragraph in the daily Press, announcing such trials, and people gather in the approaches to the aerodrome to watch them. There has been a protest in a local paper against these tests, the suggestion being that they remind nervous people of air raids, and that if they are necessary they should be carried out at some remote R.A.F. station. What will happen when night flying becomes regular ?

The weather again spoilt joy-riding on Saturday and Sunday, but several hardy individuals of both sexes went for a flip in the rain with Capt. Muir, of the Surrey Flying Services. An " Avro " belonging to the Leatherhead Aviation Company put in an appearance during the week-end, but, on the whole, business was poor.

The Dutch post-office are evidently " hustlers " in connection with air-mails. The contrast between the mail-bags to and from Holland is striking. The mail to Holland is rarely more than a few pounds in weight, whilst that arriving from Amsterdam and Rotterdam is often as much as one man can carry.

The Grandes Expresses still continue placidly running their " Goliaths " to and from Paris. Mr. Bouderie tells me that the new three-engined Goliath will not be used on the commercial service, being for military purposes.

This year's Aerial Derby looks like being a memorable race, in which all previous speed records will go by the board. Many rumours, for instance, now give place to the definitely-stated report that it is the Nieuport Company who are building a wonderfully stream-lined monoplane which, built round a 450 h.p. Napier " Lion " motor, is expected to reach a maximum speed as great as 220 miles an hour. At the same time we have fresh whispers at the air-port. There is said to be another record-breaker secretly in construction for the Aerial Derby—a machine with a performance truly colossal. At any rate, be this as it may, it is clear that the experts, and also the general public, may expect a race this year that is full of thrills.

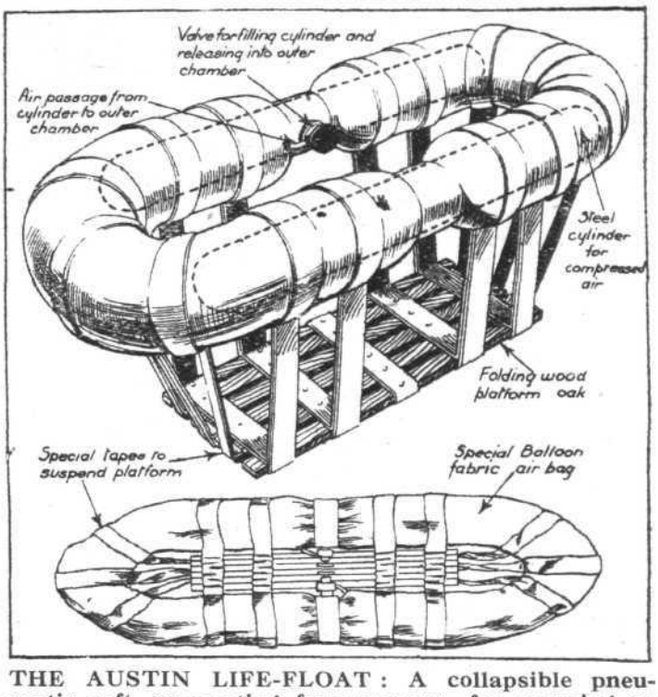
FLIGHT

THE AUSTIN "LIFE-FLOAT"

ON aerial services where more or less of the journey is made over water it is desirable—not to say essential—that some form of protection against the risk of drowning in the event of a forced descent should be provided. This is particularly so as regards land machines, but even a seaplane or flying boat may damage its float or hull and sink. Messrs. W. J. Austin and Co., of Swansea, well-known as specialists in life-saving apparatus for marine services, have designed a "life-float" or raft specially for use on aircraft, and we understand that satisfactory tests with it have been carried-out before the Air Ministry.

This "life-float" is of the collapsible type, taking up but comparatively little space, and is capable of supporting four persons. It consists of two compressed air cylinders, over which are secured two tubes of balloon fabric in the manner shown in the accompanying sketch. One end of each tube is secured to the centre of the compressed air cylinder so that the ends of one tube abut the ends of the other, thus forming a tubular ring with the air cylinders located within. Each cylinder has a valve communicating with the tubes, and on opening the valves the latter are immediately inflated, producing an oval-shaped ring of considerable buoyancy. Suspended some two feet below it, by means of fabric bands passing over the tubes, is a folding wooden platform, upon which the occupants stand. A wall of net may be fitted between the platform and the tubes, to prevent anyone from slipping "overboard."

When in use this life-float is 7 ft. long by 4 ft. wide, the diameter of the inflated tubes being 1 ft. 4 ins. When deflated, it folds up to an overall length of 5 ft. and a width of 1 ft. 3 ins.; the depth then is only 6 ins. The approximate weight is 56 lbs.



THE AUSTIN LIFE-FLOAT: A collapsible pneumatic raft, supporting four persons, for carrying on aircraft.

CAMBRIDGE UNIVERSITY AERONAUTICAL SOCIETY

THE Committee for 1920–21 having appointed a Secretary for the year 1921-22, as per authority of the General Meeting held on March 2, 1921, the officers and Committee of the Society for the year commencing June, 1921, are as follows: —

President: Sir C. J. Quintin Brand, K.B.E., D.S.O., M.C., D.F.C., R.A.F., Peterhouse.

Hon. Secretary: C. O. B. Beale, D.S.O., Trinity.

Hon. Treasurer: R. Lubbock, M.A., Peterhouse.

Committee: C. G. Funnell, Sidney-Sussex; J. C. Griffiths, Christ's; H. A. Mettam, Trinity; G. L. Newman, Christ's; and E. J. D. Townesend, R.A.F., Jesus.

Mr. C. O. B. Beale has also been appointed additional Assistant Secretary for the remainder of the present year.

O. E. SIMMONDS,
Hon. Sec.,
C.U.Ae.S., Magdalene.

PERSONALS

Married.

ARTHUR HOLLIS (late 1/9th Hants and R.F.C.) was married on May 6 at Trinity Wesleyan Church, Harrogate, to EMMELINE MARY, eldest daughter of the late THOMAS S. SIMPSON, of 9, Cavendish Avenue, Harrogate.

SQDN.-LDR. F. CARTWRIGHT WILLIAMS, O.B.E., R.A.F., younger son of the late Mr. William Cartwright Williams and Mrs. Williams, of 25, Lewin Road, Streatham, was married on May 4, at North Finchley Wesleyan Church, to HILDA, younger daughter of Mr. and Mrs. E. KELSHAM BISHOP, of Headcorn, Holden Road, Woodside Park, N.

To be Married

The marriage arranged between Sqdn.-Leader J. H. THOMSON, O.B.E., R.A.F., Coastal Area Headquarters, W.C. 1, and Miss OCTAVIA CAYLEY, 38, Thurloe Place, South Kensington, will take place at Holy Trinity Church, Brompton, S.W., on Thursday, June 16.

Aerial Pageant on July 2

THE date for this year's R.A.F. Aerial Pageant has been fixed for July 2. The Pageant, which is in aid of the Royal Air Force Memorial Fund, is again to be held at Hendon, and a very interesting programme has been drawn up, which is sure to please the great number of onlookers that are expected. The Pageant last year was seen by more than 40,000 spectators, and it is to be doubted if there was one among them who went away disappointed. Quite apart from the thoroughly deserving cause in which the Pageant is held, as a spectacle never to be forgotten it is well worth going a very long way to see, and we recommend all who can possibly do so to make arrangements for going to Hendon that day. *Remember the date—Saturday, July 2, 1921.*

America's Rigid Airship

From America it is reported that, although the projected trip across the "Pond" has been postponed for this summer at any rate, work is progressing rapidly at the Philadelphia Navy Yard on the large rigid airship. This will have a length of 800 ft. and a diameter of 85 ft. Its maximum cruising radius has been estimated at 6,600 miles, but when fully armed and manned for service purposes the radius will probably be reduced to about 2,000 miles.

U.S. Navy Secretary Launches Flying Boat

THE first of a series of Navy flying boats converted for commercial flying was launched by Secretary Denby (U.S. Navy) recently, who remarked that in order to stimulate interest in commercial aviation, the Navy Department had allotted a certain number of the type of machine being launched to be sold to the public at one-third actual cost. These flying boats are of the Navy Coast Patrol single-engined type, and they have been converted for commercial use by the Aeromarine Co. into six-seated open cockpit and six-seated enclosed cabin passenger boats, equipped with 400 h.p. Liberty engines. They have a span of 72 ft. and their speed if 75 m.p.h.

American Air Mail Mileage

SOME interesting data are furnished by the U.S. Post Office Department of the air mileage of the machines which have been used on the American air mail services. It is gratifying to find that the prize machine was a de Havilland, which flew a bagatelle of 38,348 miles in 407 hrs. 8 mins. before coming to grief in a bad crash. Its average speed for the distance was 94.4 m.p.h. The second best machine during the period in question was also a D.H., whose figures were 38,381 miles in 420 hrs. 15 mins. Its speed averaged 89.1 m.p.h. This machine is still going strong, and it is hoped it will reach the 50,000 miles figure before giving up the ghost. Four other D.H. machines have exceeded 30,000 miles. Up to December 31, 1920, the 'planes in the Air Mail Service have been in the air 18,806 hrs. 37 mins., and have covered 1,572,450½ miles. This is an average for all types of 'planes under all conditions of operation of 83.6 m.p.h. In that period they have carried more than 49,000,000 letters. The mechanics' time and the cost of plane and repair parts over this entire period of service have been at the rate of 30.5 cents per mile flown.

AIRISMS FROM THE FOUR WINDS

MISSING boat-trains and hustling through the air to make good looks like becoming quite the most ordinary episode in life for Americans and other important folk. From Cherbourg last week another little "catch" of this nature is recorded by a *Daily Chronicle* correspondent, who relates how an American passenger who missed the special boat train from Paris to Cherbourg, bringing passengers to join the "Olympic" for New York, hired a 'plane, and reached Cherbourg 90 minutes after his departure from the Paris aerodrome of Le Bourget. Moreover, the passenger—David Kleinhard, of New York—reached Cherbourg three hours before the arrival of the special train.

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HERE'S a real new-laid story from the *Sheffield Independent*: "A white Leghorn hen belonging to Mr. A. Thompson, Selby, has laid several eggs which resemble the envelope of an airship, with a blunt nose and tapering down.

"He says that he got these eggs on several occasions. At first he took no notice, but on the last two occasions such eggs were laid on the day following the visit over the town of one of the Howden airships!"

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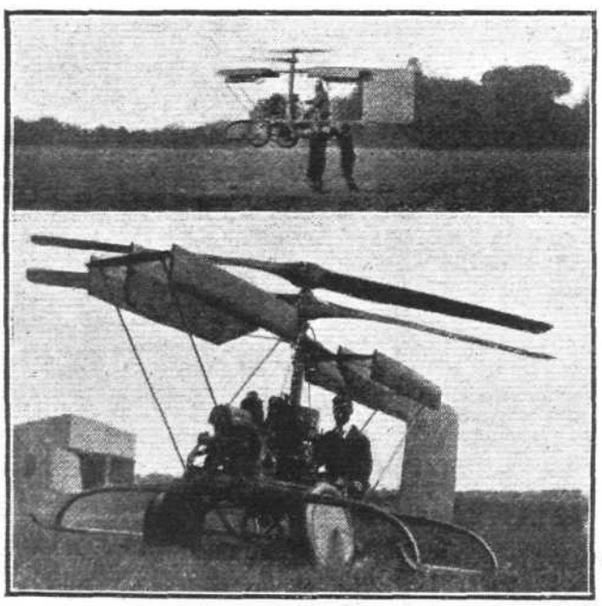
EVIDENTLY there was some admirer of the brothers Sir Ross and Sir Keith Smith around at the Tobacco Exhibition, recently opened by Sir Ross Smith, who was keen upon having a memento of their Australian flight, as one night last week, it is announced, the commemoration gold cigarette-case presented to Sir Keith was "lifted" from the show-case in which it was displayed at the Exhibition, to which it had been lent.

The cigarette-case, it will be remembered, was engraved with the route of the flight from England to Australia, with the dates of departure and arrival, and the inscription "Presented by Rolls Royce-Vimy, Ltd."

Some thieves are just too mean for anything.



THE BERLINER HELICOPTER: Last week we gave illustrations of the Petroczy-Karman helicopter, and above is shown two views of another direct-lift machine, invented by H. A. Berliner of Washington, U.S.A. The top photograph shows it in flight (on June 10 last), and below is a close-up view. The first successful flight of this machine, before the addition of the vertical stabilising fins and rudder, was made on November 11, 1919.

THE Exhibition to be opened at the Manchester City Art Gallery of about 100 drawings—chiefly in water-colour—the work of Messrs. Richard and Sydney W. Carline, two British artists and brothers, sounds highly fascinating, and it is to be hoped that, later on, London will have an opportunity of seeing the collection.

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COMMISSIONED by the Imperial War Museum to make a painting tour in the middle East, the tour was carried out by aeroplane and motor-car early last year, extending from Palestine to Persia. The idea was to in this way obtain a pictorial "panorama" of the Moslem world. To select the subjects to paint, the artists flew over most parts of the country they were in. Mr. Sydney Carline to a *Times* correspondent thus describes their method:—

"In the air one has to work very quickly, because of the rapidly changing scene. Our plan, therefore, was to fly to and fro over the selected view till one had sufficient details to complete the picture on landing. When one worked in the passengers' cockpit of the aeroplane the mapboard served as an easel and one's water-bottle was strapped around one.

"We preferred to work as passengers—though in Italy, where I had experience of painting pictures in the air as an official artist at the close of the War, I had sometimes to paint and control my Sopwith 'Camel' at the same time. There, one of the difficulties was due to the extreme cold at a great height over the Alps; in fact, the paint used to freeze on the paper as it was put on; but in Mesopotamia, when flying over the deserts, we had the reverse experience; during midsummer the heat tended to dry up the paint too quickly.

"Seen from the air, historic places seem to take on their more permanent aspect, since one's attention is not disturbed by the modern and incidental details. From the ground, the Sea of Galilee, for instance, is not so distinctive as from the air, whence one realises its curious pear-like shape and other unique characteristics."

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THEY seem at times to have had some lively experiences whilst engaged on their mission. The tour of the artists began in Palestine, and they were in Jerusalem at Easter, a period of festivals which crowds the city with pilgrims. On Good Friday Mr. Richard Carline was engaged on the drawing of Jerusalem, and, in order to lessen the danger of rioting, the aeroplane performed "stunts," to disperse collecting crowds. Northwards through Palestine the artists used a captured German motor-car for some of the way, until the car broke down in the swamps. Once when they were about 10 miles from Nablus (Shechem), they were stranded at nightfall, and had to find their way to the town in the dark on foot. Again, during a storm, which overtook them in the plain of Esdraelon, the car sank up to its axles, reminding one of Deborah's battle, in which this very plain became impassable to the chariots. Bands of Beduin marauders threatened them from time to time, even firing at them from behind cover during the daytime on several occasions, and, in particular, when they were in Jezreel (now the Arab village of Zerin), while they were painting on the site of Naboth's vineyard.

The brothers carried out the Mesopotamian and Persian part of their programme from Basra as base. To reach Kerbelah (Meshed Hussein), some 20 miles south-west of Musseiyib, on the Euphrates, which is famous as the site of the tomb of Hussein, the grandson of the Prophet, they traversed the desert route from Babylon. While painting, they were under armed native guard. The Moslems of Persia and Mesopotamia proved to be more fanatical and supersitious than those of Western Syria, and especially resented the drawing of pictures of mosques. They were also very shy about posing as figures themselves in the drawings.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, April 26

Permanent Commissions

Flight-Lieut. P. Huskinson, M.C., is placed on half-pay, Scale B; March 8 to March 31 (substituted for *Gazette*, April 19).

The following are granted permanent commns. in the ranks stated, with effect from the dates indicated, retaining their seny. in the substantive rank last held prior to the grant of this commn. *Gazettes* of March 9, 1920, and Oct. 24, 1919, respectively, appointing them to short service commns., are cancelled.—Flight-Lieut. J. C. Slessor, M.C.; Feb. 24, 1920 (substituted for *Gazette*, Dec. 17, 1920). Flying Offr. G. H. Boyce, A.F.C.; Oct. 24, 1919 (since promoted).

Stores Branch

Flying Offr. F. Petch, M.B.E., is granted a permanent commn., retaining his substantive rank and seny.; July 20, 1920 (since promoted).

The follg. Pilot Offrs. are granted permanent commns. as Flying Offrs., with effect from, and with seny. of, the dates indicated. *Gazettes* of Sept. 12 and 16, 1919, respectively, appointing them to short service commns., are cancelled.—A. H. Allan; Sept. 12, 1919. R. F. Wilson; Sept. 16, 1919.

Short Service Commissions

The follg. are granted short service commns. in the ranks stated, with effect from the dates indicated, retaining their seny. in the substantive rank last held prior to the grant of this commn., except where otherwise stated :—

Flying Offr., from Flight.-Lieut.—R. R. Soar, D.S.C.; April 7.

Flying Offrs.—D. F. Anderson; April 10. P. H. Burt; April 2. A. C. Clinton; Aug. 14, 1920 (substituted for *Gazette*, Aug. 27, 1920).

Flying Offrs., from Pilot Offrs., with seny. of the dates indicated.—R. W. Hill; April 4. A. C. Lamb; April 13. R. G. Mollard; April 4.

Pilot Offr. on Probation, with seny. of March 29.—A. Maybaum; March 29 (from Unemployed List).

Flying Offr. Soar will be placed at the head of the list of Flying and Observer Offrs., and will retain seny. relative to other Offrs., who have been similarly gazetted to commns. in a rank lower than their previous substantive rank in accordance with their previous position on the gradation list. The names of Flying Offr. Anthony Woollam Bloy are as now described, and not as *Gazette*, Oct. 24, 1919.

Stores Branch

Flying Offr. H. J. Birtles resigns his commn., and is permitted to retain the rank of Lieut.; April 11.

Seconding and Re-Seconding

Lieut. A. de C. McG. Denny, R.F.A., is granted a temp. commn. as Flying Offr. on seconding for four years' duty with the R.A.F.; April 6. Lieut. C. R. Richardson, E. Yorks R., is granted a temp. commn. as Flight-Lieut., retaining his original seny. in that rank, on re-seconding for four years' duty with the R.A.F.; April 8.

Flying Branch

Sec. Lieut. C. K. McWilliam relinquishes his temp. commn. on appt. to T.F. Res., and is permitted to retain his rank. Lieut. D. W. Hardy relinquishes his temp. commn. on account of ill-health contracted on active service, and is permitted to retain his rank; April 17.

Transferred to the Unemployed List.—Sec. Lieut. W. B. Lake; May 9, 1919. Lieut. G. A. Gowler; Oct. 8, 1919 (substituted for *Gazette*, Feb. 17, 1920). Lieut. H. N. Young, D.F.C.; Oct. 8, 1919 (substituted for *Gazette*, March 2, 1920). Lieut. E. A. M. Waterton; Dec. 10, 1919 (substituted for *Gazette*, March 30, 1920).

Gazette, July 12, 1918, relating to Prob. Observer Offr. F. J. Hopwood, is cancelled.

Administrative Branch

Sec. Lieut. J. Mahoney is graded for pay and allowances as Lieut., Ad., from May 1, 1919, to Sept. 11, 1919, inclusive.

Gazette, Jan. 10, 1919, relating to Lieut. (actg. Capt.) W. A. C. Ricketts, is cancelled.

Gazettes, Dec. 7, 1920, and Aug. 26, 1919, relating to Lieut. W. Ricketts, are cancelled.

Technical Branch

Transferred to the Unemployed List.—Sec. Lieut. F. E. Openshaw; Jan. 27, 1919. Sec. Lieut. H. R. Mayes; April 4, 1919 (substituted for *Gazette*, April 15, 1919).

Medical Branch

The following are granted temp. commns. as Flight-Lieuts., with effect from and with seny. of the dates indicated.—R. J. Monahan, M.D.; April 11. J. Craig, M.D.; April 25.

Memoranda

Two Cadets are granted hon. commns. as Sec. Lieuts., with effect from the date of their demobilisation.

Capt. W. Ricketts is transfd. to the Unemployed List, from S.O.; May 4, 1919.

London Gazette, April 29

Permanent Commissions

Wing Commdr. L. A. Strange, D.S.O., M.C., D.F.C., is placed on the Retired List on account of ill-health contracted in the Service, and is permitted to retain the rank of Lieut.-Col.; Feb. 24 (substituted for *Gazette*, March 15). *Gazette* of Feb. 11, placing Flight-Lieut. R. M. Drummond, D.S.O., M.C., on half-pay is cancelled.

Short Service Commissions

Flying Offr. C. E. Nightingale resigns his commn., and is granted the rank of Capt.; May 1.

Flying Branch

Lieut. H. F. Carpenter relinquishes his temp. commn. on appt. to T.F., and is permitted to retain his rank. Pilot Offr. A. D. Greenhough to be Flying Offr.; Aug. 23, 1919.

Transferred to the Unemployed List.—Lieut. C. B. Wilson; Oct. 22, 1919 (substituted for *Gazette*, Nov. 4, 1919. Lieut. A. D. Greenhough; Aug. 5, 1920 (substituted for *Gazette*, Aug. 17, 1920). Lieut. D. A. Neville; April 28.

Administrative Branch

Lieut. M. A. Robinson is transfd. to the Unemployed List; Jan. 15, 1919. *Gazette*, Feb. 18, 1919, relating to Sec. Lieut. (Hon. Lieut.) J. Johnstone, is cancelled.

Memoranda

Three Cadets are granted Hon. Commns. as Sec. Lieuts., with effect from the dates of their demobilisation.

The following Hon. Sec. Lieuts. relinquish their Hon. commns., with effect from the dates stated.—G. S. Ambrose; Nov. 23, 1920. A. E. P. Burton; April 19, 1920.

London Gazette, May 3

Permanent Commissions

Wing-Comdr. C. E. Risk, D.S.O., is placed on half pay, Scale A; April 28. Flight-Lieut. H. G. Hutchinson, M.B.E., is restored to active list from half-pay; April 28.

Stores Branch

Flying Officer E. H. Eldridge is granted a permanent commission, retaining his present rank and seniority; June 17, 1920. Flight-Lieut. E. J. Sayer, M.C., is promoted to rank of Sqdn. Leader; Jan. 1.

Short Service Commissions

The following are granted short-service commissions in ranks stated, with effect from dates indicated, retaining their seniority in substantive rank last held prior to grant of this commission :—

Flying Officers.—S. E. Adams; Jan. 31 (substituted for *Gazette*, March 1). G. R. Stafford; April 16.

Flying Officer from Pilot Officer.—A. L. Pearce; April 15.

Pilot Officers on Probation.—With seniority of dates indicated :—A. E. Rogenhagen; April 15. R. G. R. Godby; March 29 (substituted for *Gazette*, March 29). Flying Officer J. C. O. Dickson is restored to active list for temporary duty from Class A Res.; April 11.

Flight Lieut. J. O. Groves resigns his commn., and is permitted to retain rank of Capt.; April 20. Flying Officer W. D. Miller resigns his commn., and is permitted to retain rank of Lt.; April 1. Flying Officer R. H. Tweedy resigns his commn., and is granted rank of Capt.; May 4.

Stores Branch

H. E. Rowley is granted a short-service commn., as Sqdn. Leader for Accountant duties; April 11.

Flying Branch

The following Sec. Lieuts. relinquish their temp. commns. on appointment to T.F., and are permitted to retain their ranks :—A. J. McD. Grimston, G. Stannard, R. C. Hatcher.

Lieut. (Hon. Capt.) A. H. C. Hope relinquishes his temp. commn. on appt. to T.F. Reserve, and is permitted to retain rank of Capt.

Lieut. P. J. M. V. de Couinch relinquishes his temp. commn. on ceasing to be empld.; Dec. 7, 1918.

Administrative Branch

Capt. S. H. Alston relinquishes his temp. commn. on appt. to T.F. Reserve, and is permitted to retain his rank.

Technical Branch

Lieut. H. C. Bankart to be actg. Capt. Grade B, from April 1, 1918, to April 24, 1918, inclusive, and from May 19, 1918 to April 30, 1919, inclusive, and is graded for pay and allowances as Capt., Grade B, from May 1, 1919, to July 8, 1919, inclusive. Capt. L. F. Plugge is transferred to the unemployed list; April 29.

Medical Branch

The following are granted temp. commns. as Flight-Lieuts. with effect from, and with seniority of, the dates indicated :—C. P. Barber; May 2. J. F. P. Gallagher, L.R.C.S., L.R.C.P.; April 18. H. C. E. Quin, L.R.C.S., L.R.C.P.; April 8.

Capt. G. M. Mellor is transferred to the unemployed list; April 1, 1920.

Stores Branch

The following are granted temp. commns. on probation in the rank stated for Accountant duties :—

Flight Lieutenant.—E. W. Gregory; April 11.

Flying Officers.—W. W. Deane, S. C. Gibbs, E. W. Horncastle (from unemployed list), H. F. Law, L. de L. Leder, S. A. Martindale (from unemployed list), K. R. Money, A. L. Palmer, E. D. Preston, R. D. Robbins, D. A. W. Sugden; April 11.

Pilot Officers.—B. O. Blofeld, H. A. Murton (from unemployed list), R. W. L. Glenn; April 14.

Pilot Officer M. J. Hayes resigns his temp. commn.; April 30.

Note.—The seniority of all officers granted commns. in the Stores Branch for Accountant duties is provisional only. The final seniority list of all such officers will be promulgated when the establishment is completed.

Dental Branch

Capt. H. O. Salt is transferred to the unemployed list; Feb. 1.

Thames Alighting Tests Continued

THE alighting tests which are being carried out on the Thames and Seine were continued this week when, on Tuesday, May 10, Sir Frederick Sykes, Controller-General of Civil Aviation, flew from the Thames at Westminster to the Seine in the centre of Paris, as passenger in the Vickers "Viking" amphibian. On the following day the machine returned to London, carrying as passengers Sir Frederick Sykes and M. Laurent Eynac, French Under-Secretary of State for Air. Piloted by Capt. Cockerell, the "Viking" arrived over Westminster just before the scheduled time of 12.30, and, swinging over the end of Lambeth Bridge, an excellent alighting was made, showing that it is possible to put the machine down in a very small space indeed. After lowering the land wheels the machine was taxied up on the Hard at Doulton's, where the party were met by representatives of the Air Ministry, and others interested in or connected with aviation. Among those present we noticed General Festing, Col. Beatty of the Air Ministry, and Sir Ross Smith, who admitted that a machine like the "Viking" would have saved him a lot of trouble on his flight to Australia. Afterwards the "Viking" was flown down to Croydon, where she (or should one say he in the case of a Viking?) is stationed. M. Eynac expressed himself very pleased with the facility with which the trip was made.

SIDE-WINDS

ROUMANIA is a potential market of considerable magnitude but unfortunately at the moment trade with that country is greatly handicapped by the unfavourable rate of exchange, which practically prevents our late ally from buying material from this country. Thanks, however, to the Government Export Credit Scheme, it has been found possible to do much to overcome the difficulties arising from the present rate of exchange, and among the first to avail themselves of the opportunity thus offered are Messrs. Barimar, Ltd., who, we are glad to learn, have established themselves in Roumania, under the style "Barimar" Societate Anonima, Bulevardul I.C. Bratianu 24, Bucarest. This new overseas enterprise is another striking instance of the far-seeing policy so consistently pursued by Messrs. Barimar. It is only fair to point out, however, that only by the aid of the officials of the Government Export Credit Scheme has it been possible to transport thousands of pounds'-worth of British welding machinery and plant to Bucarest, where it has been installed in the Barimar works.

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WE learn from Messrs. Rolls-Royce, Ltd., that they have secured the services of Mr. A. J. Rowledge for a long term of years. Mr. Rowledge was Chief Designer for many years for the Wolseley Motor Company, and during the past seven years has been Chief Designer for the Napier Company. As a designer, his name is a household word, especially in connection with aero engines, a point which is all to the good of the Aviation Industry.

⁂ ⁂ ⁂ ⁂

IN PARLIAMENT

Air Force Reserve (Eastchurch)

LIEUT.-COMMANDER KENWORTHY, on May 3, asked the Secretary of State for Air what is the number of Air Force reservists encamped at Eastchurch, Isle of Sheppey; how many of these are officers, warrant officers, and non-commissioned officers, respectively; what is the weekly cost of maintaining this camp; what duties these officers and men are performing; whether a deputation from the camp waited upon the camp commandant and respectfully represented the great loss and hardship many of the officers and men in camp were experiencing; and when it is intended to release them?

Capt. Guest: The number of Air Force reservists at Eastchurch is 1,071. This includes 24 warrant officers and 456 non-commissioned officers. There are no reservist officers. The estimated weekly cost is £4,000, this figure representing pay and maintenance of the personnel. Beyond the normal duties of the station, no special work has yet been ordered. Representations in the sense suggested in the fifth part of the question have been made by individual airmen on the invitation of the Officer Commanding. The decision to release these officers and men rests with the Cabinet.

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The Air League of the British Empire

MR. PHILIP S. FOSTER, Chairman of the Executive Committee, presided at the Annual Meeting of the A.L.B.E., held on May 5, at 46, Dover Street.

A suggestion by Admiral the Hon. Sir Edmund Fremantle, a member of the Council of the League, that the Royal Navy should be represented on the Executive Committee by one or more officers, preferably young men, was adopted.

In their annual report the Committee stated that Lieut.-Col. F. K. McClean had offered £1,000 towards a fund for propaganda if £9,000 could be added before the end of 1921, and that already approximately £2,000 had been either promised or paid. During the early part of the present year Maj.-Gen. Sir W. S. Brancker had been carrying out valuable organising work for the League, visiting many important towns, and a solid foundation had been laid for a permanent organisation throughout the country.

Air-Line for Brazil

ACCORDING to the *Agencia Americana* an important aerial transport company has just been formed at Rio Grande de Sul, for the purpose of assuring a regular transport service for passengers and freight between Rio Grande and various centres in the neighbouring States. The machines for this service are of French manufacture.

A Proposed Danish Aero Meeting

AN important Committee has been formed to make arrangements for holding an Aviation Meeting in Denmark early in the summer.

The Danish Military and Naval pilots have received permission to take part in the meeting, and the two aviation companies, Dansk Luftrederi and Dansk Luftfartselskab, have promised to enter all their machines.

Ricci Company on a New Design

FROM Lucrino it is reported that the Italian Ricci aeroplane works are to be employed upon the construction of machines entirely different from those hitherto produced, as regards design and construction.

COMPANY MATTERS

Rolls-Royce, Ltd.

THE report of directors for the year ended October 31, 1920, states that after (*a*) paying or providing for all trading expenses and suitable depreciation of buildings, machinery and plant, and charging repairs and replacements to revenue, and (*b*) making provision for estimated Excess Profit Duty and Corporation Profits Tax, the trading for the year has been ascertained to have resulted in a net profit of £202,835 3*s*. 3*d*., as compared with £192,777 13*s*. 7*d*. for the previous year. The directors recommend that the balance of profits should be utilised as set out in the accompanying appropriation account.

⁂ ⁂ ⁂ ⁂

PUBLICATIONS RECEIVED

Technical Note No. 45. *Extract from a Report on the Resistance of Spheres of Small Diameter in an Airstream of High Velocity.* By Capt. Toussaint and Lieut. Hayer. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 102. *Performance of a Liberty* 12 *Airplane Engine.* National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

⁂ ⁂ ⁂ ⁂

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; = I.C. internal combustion; m. = motors

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1919

Published May 12, 1921

24,720. H. LEITNER. Screw propellers. (161,605.)

APPLIED FOR IN 1920

Published May 12, 1921

635. T. and F. C. COWBURN. Rotary I.C. engines. (161,644.)
703. H. E. S. HOLT. Parachute. (161,645.)
1,007. H. R. G. VAN DE VELDE and J. M. FURNIVAL. Wireless direction-finding apparatus. (161,667.)
1,124. O. S. PENN. Landing-gear. (161,676.)
1,777. H. O. SHORT. Flying-boats. (161,711.)
5,517. J. DUGAN. Drift correction and indicating apparatus. (161,784.)
6,643. B. G. TEXTILEWERKE GES. Balloon envelope fabric. (139,807.)
11,818. S. A. MOSS. Turbo-superchargers for aircraft. (144,259.)
16,579. ANSCHUTZ AND CO. Turning indicators. (145,459.)
20,137. GOTHAER WAGGONFABRIK AKT.-GES. Spring arrangements for aircraft undercarriages. (148,214.)
23,265 and 25,803. W. DE F. CROWELL. Wind shields. (161,895 and 161,900.)

NOTICE TO ADVERTISERS

All Advertisement Copy and Blocks must be delivered at the Offices of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, not later than 12 o'clock on Saturday in each week for the following week's issue.

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